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## SCHMIDT'S DRAWINGS OF NEBULA ORIONIS 1860–75 COMPARED WITH PHOTOGRAPHS.

While I was engaged in observing the nebula of *Orion* at Washington, Dr. SCHMIDT presented me with two beautiful original drawings of the nebula, made by himself, at Athens, with the 6-inch refractor.

The scale of the first is 1 *c.m.* = 1′. It is about 13 inches by 13 inches. The central portions of this drawing are reproduced in *Washington Astronomical Observations* for 1878, Appendix I, page 74, figure 28. No comparison can be given of this drawing with such photographs as those by Mr. COMMON, and at the Lick Observatory, as such a comparison would carry us too much into detail and would require too much space.

The second drawing bears the title "Orion-nebel 1860–75, Athen, J. F. JUL. SCHMIDT." It is about 18 x 18 inches on a scale of 7 *mm* = 8 seconds. It extends from $5^h\ 24^m\ 20^s$ to $5^h\ 32^m\ 52^s$, and from—4°26′ to —6°34′ (1861.0). It was evidently intended by Dr. SCHMIDT to include all the extent that could be seen with his telescope, and it is, in fact, a truly admirable production. I have compared it carefully with Mr. ROBERTS' paper-print, especially as to the outlines of the fainter portions. If it were practicable to reproduce the drawing of Dr. SCHMIDT and the photograph of Mr. ROBERTS here, side by side, very many interesting points could be brought out by comparing the two. As it is not practicable, I have made the comparison by copying with ink on the glass which covers SCHMIDT'S drawing, the principal outlines of Mr. ROBERTS' photograph. This could be done very accurately by means of the stars common to both representations. The principal points brought out in this way are as follows: The pictorial effect is vastly more striking and natural in the photograph for all the fainter portions of the nebula. The brighter portions are, of course, all lost in the photograph, as they are necessarily very much over-exposed. (An exposure of 15 to 20 minutes is sufficient for them.) The outlines of the fainter portions given by SCHMIDT are almost exactly the same as those shown by Mr. ROBERTS' paper-print. If, however, the original negative were at hand, the photographic representation would gain still more, for the print, though very excellent, can not do justice to the more delicate details. The drawing shows the latter wonderfully well, but it fails in some respects—notably in the region containing BOND'S stars Nos. 467, 246, 404, etc., where Dr. SCHMIDT has represented the general direction of the fainter wisps of nebulosity not quite correctly. To see them at all was an achievement. They are not given in the fine engraving of G. P. BOND for example. The nebula about *c Orionis* is especially good in SCHMIDT's drawing. The general conclusion from the comparison is that it is *possible* with a six-inch refractor to produce a drawing of the nebula which shall have an astronomical value fairly comparable with that of Mr. ROBERTS' splendid photograph as reproduced in a paper-print. And, moreover, it is evident that SCHMIDT's drawing comes very near to giving all that can be seen with such a telescope. When we reflect, however, on the labor required to produce such a drawing and on the fact that its true value can not even be appreciated until it has been compared with the autographic results of photography, and finally that the 205 minutes of exposure must be set against very many hours spent at the telescope in the years 1860–75, the surpassing importance of such representations as those of Mr. COMMON, of Mr. ROBERTS, and as our own negatives, becomes manifest.

E. S. H.

## THE COMETS OF 1890.

The Comets of 1890 have been:

Comet *a*, discovered by Professor BROOKS, at Geneva, New York, March 19.

Comet *b*, discovered by M. J. COGGIA, at Marseilles, July 18.

Comet *c*, discovered by W. F. DENNING, Esq., at Bristol, July 23.

Comet *d*, (D'ARREST's periodic comet) re-discovered by Mr. E. E. BARNARD, at Mt. Hamilton, Oct. 6.

Comet *e*, discovered by Professor T. ZONA, at Palermo, Nov. 15.

Comet *f*, discovered by Dr. R. SPITALER, at Vienna, Nov. 16.

## CORRECTIONS TO PUBLICATION NO. 13.

Page 2; *for* MATEO CLARK *read* MATEO CLARK*.
" 8; *for* F. W. ZEILE *read* F. W. ZEILE*.

## CORRECTION TO PUBLICATION NO. 14.

Page 11; line 3: *for* Washington *read* Washburn.